

August 1, 1997

**GROUNDWATER MONITORING
WELL INSTALLATION
WORKPLAN**

245 8th Street
Oakland, California

Project No. 1625

Prepared for

Mr. Victor Lum
Vic's Automotive
245 8th Street
Oakland, CA 94607

Prepared by

All Environmental, Inc.
3364 Mt. Diablo Blvd.
Lafayette, CA 94549
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AEI

ALL ENVIRONMENTAL, INC.

Environmental Engineering & Construction

August 1, 1997

Ms. Jennifer Eberle
Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

Re: Workplan
245 8th Street, Oakland, California
Project No. 1625

Dear Ms. Eberle:

This letter is a proposed workplan for your review and approval for further investigation of petroleum hydrocarbon impacted groundwater at the above referenced property. This workplan is in response to your April 30, 1997 correspondence to Mr. Victor Lum. All Environmental, Inc. (AEI) is providing environmental engineering consulting and construction services to Mr. Lum, and is submitting this letter on his behalf.

Site Description and Background

The site is located in a commercial zone at the corner of 8th Street and Alice Street in Oakland (Figure 1: Site Location Map). The topography of the site is relatively flat, with an elevation of approximately 32 feet above mean sea level. The nearest significant surface water is Lake Merritt, located approximately 2200 feet to the northeast, and the Alameda Inner Harbor located about 2400 feet to the south southwest. The narrow waterway connecting Lake Merritt with the Inner Harbor lies approximately 2200 feet to the southeast.

One building is located on the property, which contains both an auto repair shop and office for Vic's Automotive. A gasoline dispenser island and canopy are located north of the building. The building is surrounded by an asphalt paved parking lot.

Five underground storage tanks were removed from the site in June, 1993 by AEI. The tanks consisted of four 1,000 gallon gasoline tanks, and one 250 gallon waste oil tank. Prior to removal, approximately 425 gallons of waste product were pumped from the tanks. Two additional 6,000 gallon gasoline tanks were removed by AEI in August of 1994.

Soils taken from the excavations were found to be contaminated, with as much as 3700 ppm Total Petroleum Hydrocarbons (TPH) as gasoline in stockpiled soil, and 160 ppm TPH gasoline in soils taken from the bottom of one of the excavations. Groundwater was encountered during the removal of the (2) 6,000 gallon gasoline tanks. Free phase floating product was observed.

AEI drilled two soil borings and converted each boring into a groundwater monitoring well (MW-1, MW-2) on July 14, 1995.

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Quarterly monitoring of the wells initially occurred on July 21, 1995. The depth to groundwater was measured at approximately 17 feet bgs. Approximately two feet of floating product was discovered in MW-1, therefore, groundwater samples were not collected from the well. Groundwater samples collected from MW-2 indicated concentrations of 68,000 ppb TPH as gasoline and 480 ppb benzene present within the groundwater.

Groundwater gradient was determined using two off-site wells installed for a subsurface investigation at a neighboring site. The groundwater flow direction was measured to the south with a gradient of approximately 0.01 feet per foot.

On October 17, 1995, AEI performed the second quarterly groundwater monitoring episode. Samples collected from MW-2 indicated up to 210,000 ppb TPH as gasoline and 720 ppb benzene present within the groundwater. Free floating product was present within MW-1 at a thickness of 1.53 feet. The groundwater beneath the site continued to flow to the south with a measured gradient of 0.01 feet per foot.

The removal of free floating product from MW-1 was initiated in July, 1995. The product was removed by manual bailing from July, 1995 to October, 1996. During this time period a total of 172 gallons of water and product were removed from the well. AEI estimates that at least 45 gallons of free product was removed during this time period. In November, 1996, AEI installed a pumping system to remove the free product more efficiently. Since the installation of the pumping system, approximately 900 gallons of product and water has been pumped from the well.

On August 8, 1996, AEI advanced three soil borings (SB-1, SB-2 and SB-3) to define the extent of the free product plume (refer to Figure 1 for boring locations). Grab groundwater samples were collected from the soil borings to qualitatively assess the contaminant plume. A sheen was observed on the groundwater sample collected from SB-2, advanced approximately 25 feet west of MW-1. No sheen was observed on the groundwater samples collected from SB-1 or SB-2, however significant concentrations of unmodified or weakly modified gasoline, BTEX and MTBE were present in the samples.

Purpose

The following Scope of Work describes activities for the installation of ^{four} ~~two~~ four inch groundwater monitoring/extraction wells to obtain quantitative groundwater data and to further delineate the groundwater contaminate plume up-gradient and down-gradient of the subject property.

Scope of Work

Soil Boring Advancement

AEI proposes to advance ~~four soil borings~~ using a hollow stem auger drilling rig. The borings will be advanced at the locations shown on Figure 1 to a depth of approximately ~~20 feet bgs~~. The soil borings will be continuously logged on-site by a geologist using the Unified Soil Classification System. Undisturbed soil samples will be taken at 5 foot intervals, starting at 5 feet bgs, with a hammer-driven California Modified split spoon sampler. ~~Soil samples will be collected at the capillary fringe as well as 5 feet above the capillary fringe in order to determine if groundwater contamination is due to the former on-site USTs.~~ The sampler will be advanced ahead of the auger tip by successive hammer blows. The samples will be collected for visual classification and chemical analysis in two-inch diameter stainless steel tubes. ~~A total of two soil samples from each boring will be analyzed at a state certified laboratory.~~ The soil samples

+ CG

good

selected for chemical testing will be determined by the geologist on-site at the time of sampling. Soil samples obtained during drilling will be screened in the field with a portable organic vapor meter.

The soil samples will be secured using teflon tape and plastic caps. The samples will be put on wet ice and transported under chain of custody procedures to the AEI office. The samples will be transported to McCampbell Analytical for analysis. Two soil samples will be analyzed for TPH as gasoline, BTEX and MTBE.

per borings

Cuttings generated during drilling will be stored on-site in 55 gallon drums. On-site treatment or off-site disposal of contaminated drill cuttings is not a part of this work scope. It is likely that a licensed hauler will be contracted to transport the soils as non-hazardous waste, under appropriate manifests, to a local landfill facility.

Groundwater Monitoring Well Installation

The four soil borings will be converted to a 4" monitoring wells labeled MW-3, MW-4, MW-5 and MW-6. The wells will be constructed of 4" flush threaded Schedule 40 PVC casing, with up to 15 feet of .01" or .02" factory-slotted well screen. The top of the well screen will extend up to 3 feet above the encountered groundwater level to account for seasonal fluctuations. The well casing will be inserted through the auger to a point a few inches above the borehole terminus where it will be suspended until the well is secured within the sand pack. Sand (#2 or #3) will be poured through the auger in one- to two-foot lifts up to about two feet above the top of the perforated casing. One to two feet of bentonite pellets will be placed above the sand and activated with tap water. The bentonite seal will be finished up to the surface with tremmed cement/bentonite grout. A locking top cap and a flush-mounted watertight well cover will be installed.

The wells will be developed by bailing of water into a 55 gallon drum until the water appears to be reasonably clear with a minimum of 10 well volumes removed. Well development will take place no less than 72 hours after installation of the wells.

Groundwater Monitoring

The newly installed wells will be surveyed to the nearest .01 foot with respect to the on-site wells for the determination of groundwater flow direction and gradient. Groundwater level measurements and groundwater samples will be collected from all five wells on a quarterly basis. The wells will be measured for the presence of separate phase hydrocarbons.

Prior to obtaining water samples, three to five well volumes of water will be bailed from each well. Groundwater samples will be obtained in a pre-cleaned bailer, secured in 40 ml volatile organic analysis vials, placed in a cooler with wet ice and delivered to a State certified laboratory with chain of custody documents. Water samples will be analyzed for TPH as gasoline, BTEX and MTBE with an approximate 5 day turnaround time.

AEI will prepare a written final report following each quarterly monitoring episode. The report will detail the findings of the sampling episodes and will include sampling data, laboratory analyses, conclusions and recommendations. Copies of the final report will be submitted to the client and all of the appropriate agencies.

Health and Safety

Prior to commencement of field activities, a site safety meeting will be held at a designated command post near the working area. Emergency procedures will be outlined at this meeting. Also, the hazards of the known or suspected chemicals of interest will be explained. Level D personal protection equipment is the anticipated maximum amount of protection needed. A site safety plan which conforms to Part 1910.120 (i) (2) of 29 CFR will be on site at all times during the performance of this project.

A working area will be established with barricades and warning tape to delineate the zone where hard hats and steel-toed shoes must be worn, and where unauthorized personnel will not be allowed. If, during drilling, air monitoring data indicates concentrations above 5 ppm (benzene) in the breathing zone, half-face respirators with organic vapor cartridges will be worn.

A nearby hospital will be designated in the site safety plan as the emergency medical facility of first choice. A map with a course plotted to the hospital will be on-site.

Estimated Schedule


Upon acceptance of this workplan by the ACHCSA, work will commence within a two week period. The ACHCSA will be given adequate notification of the scheduled day of drilling. Laboratory analytical results will be obtained within two weeks of collection. The final report will be prepared and copies will be delivered to the ACHCSA. A table describing the project schedule is as follows:

Week 1:	Workplan Preparation
Week 2 & 3:	Review of Workplan by the ACHCSA
Week 4 & 5:	Drilling and Laboratory Analyses
Week 6:	Preparation of Final Report

AEI requests your approval to proceed with this project. Please let me know if you need additional information and please do not hesitate to call me at (510) 283-6000 if you have any questions.

Sincerely,
ALL ENVIRONMENTAL, INC.


Jennifer Pucci
Project Manager


Joseph P. Derhake, PE, CAC
Principal

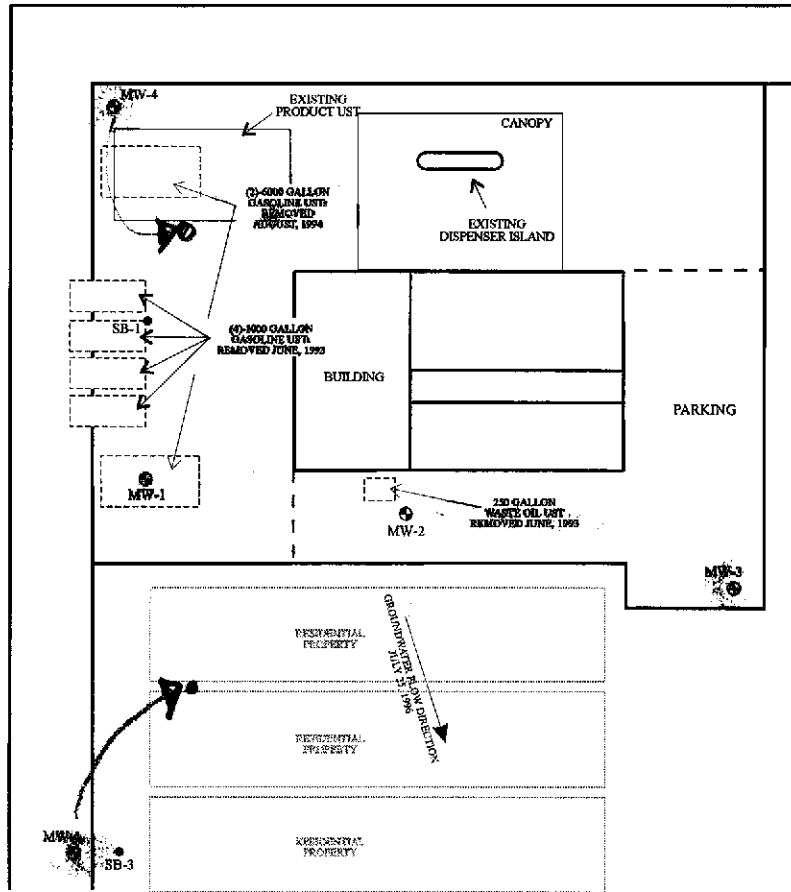
cc: Mr. Victor Lum, Vic's Automotive

Attachment



8th STREET

ALICE STREET



KEY

- ④ PROPOSED MONITORING WELL LOCATION
- MONITORING WELL LOCATION INSTALLED 7/14/95
- SOIL BORING LOCATION ADVANCED 8/8/96



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SCALE, FT

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DRAWN BY: JSA
DATE: 1 AUGUST 97

REVISED BY:
APPROVED BY:

MONITORING WELL LOCATION MAP

245 8TH STREET
OAKLAND, CALIFORNIA

FIGURE 1